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Study of etiological factors in unilateral maxillary chronic sinusitis

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ABSTRACT

Background: Chronic rhinosinusitis is an extremely prevalent disorder which has significant effect on quality of life of affected individual. Varied symptomatology and varied etiology of unilateral chronic maxillary rhinosinusitis requires a comprehensive approach by otorhinolaryngologist. The objectives of the study were to evaluate the causative factor of unilateral chronic maxillary sinusitis and to study clinical presentation of unilateral chronic maxillary sinusitis.

Methods: 50 patients with symptoms and signs suggestive of unilateral chronic maxillary sinusitis were evaluated. All were subjected to detailed clinical history, ENT examination including complete orodental examination, diagnostic nasal endoscopy, intra oral peri apical radiographs, CT scan of para nasal sinuses.

Results: Of total of 50 patients studied, gross deviated nasal septum (DNS) is commonest cause of chronic unilateral maxillary sinusitis followed by dental infection of upper premolars.

Conclusions: This study was carried out with an effort to find out etiology of unilateral chronic maxillary sinusitis as identification of etiology will help in successful outcome of the treatment.

Keywords: Unilateral maxillary sinusitis, Odontogenic maxillary sinusitis, Cone beam computed tomography

INTRODUCTION

Chronic sinusitis is extremely prevalent disorder that has significant impact on quality of life of affected individual. It is one of the most common problems encountered in ENT practice. Chronic rhinosinusitis (CRS) refers to disease that persists beyond 12 weeks. Any anatomical, physiological or pathological features which in a way obstruct free drainage from sinuses permits stasis of secretion and predisposes to infection. At times it is difficult to arrive at an etiological factor as pathogenesis of chronic rhinosinusitis is not well defined. It is becoming increasingly clear that CRS is inflammatory disease it may or may not involve pathogenic microbes. There is considerable range of anatomical variations in ostiomeatal complex which has been implicated in etiology of sinus infection.¹ Maxillary sinuses are fully dependent on anterior ethmoid region because their ventilation and drainage pass through

complicated fissures and narrow compartments.² Unilateral maxillary sinusitis is a multifactorial disease, possible causes are gross deviated nasal septum (DNS), ostiomeatal complex abnormalities like prominent bulla, paradoxically turned middle turbinate, medialised uncinate, prominent agger nasi cells, antrochoanal polyp, and less well recognized odontogenic factor which if not recognized preoperatively will result in endoscopic sinus surgery failure. Foreign body in sinus like tooth root, dental prosthesis are also contributory factors. Children often insert peas, beans, button, safety pins and bits of plastic toys into their nostrils. Foreign bodies often remain undetected until an infection develops in nasal cavity. Messerklinger showed that in most cases infections spread from anterior ethmoidal area and middle meatal region to secondarily affect maxillary and frontal sinuses.³ In this study every attempt is made to find out possible etiology contributing to unilateral maxillary sinusitis so that correction of etiology will help

in correcting the disease and also results in successful outcome of treatment.

METHODS

This is time bound cross sectional study carried out in ENT department of J.J.M medical college from January 2010 to January 2012. 50 patients with symptoms, signs suggestive of unilateral maxillary rhinosinusitis of more than 12 weeks duration are included in study.

Exclusion criteria were patients with acute sinusitis, bilateral chronic rhinosinusitis on tomographic findings and patients suffering from chronic granulomatous diseases of nose.

Collection of data

This study is time bound cross sectional study. Cases subjected for the study were subjected to detailed clinical history and clinical examination. Complete orodental examination carried out with particular attention to maxillary teeth. Diagnostic nasal endoscopy was performed with first, second, third pass evaluation of nasal cavity after topical anesthesia and decongestion of nasal cavity.

Investigations

All 50 patients were subjected to complete hemogram, absolute eosinophil count, RBS, urine routine. Antral wash was taken and was sent to department of microbiology

Imaging

Intra oral peri apical radiographs were taken of maxillary teeth. Imaging of nose and PNS was done with sinus computed tomography, maxillary teeth on CT were examined for periapical lucencies.

RESULTS

Table 1 represents the sex distribution of the participants involved in the study. Out of 50 patients, 26 were males and 24 were females.

Table 1: Sex distribution.

Sex	Number of patients	Percentage
Male	26	52
Female	24	48
Total	50	100

In our study 8 patients were in the age group of 5-15 years, followed by 14 in the age group 16-25 years, 11 patients in 26-35 years, 12 patients in 36-45 years, 2 patients each in 46-55 and 56-65 years age group, 1 patient in 66-75 years age group. Youngest patient was 7

years and oldest patient was 67 years as shown in Table 2.

Table 2: Age distribution.

Age (years)	Male	Female	Total	Percentage
5-15	4	4	8	16
16-25	6	8	14	28
26-35	6	5	11	22
36-45	8	4	12	24
46-55	1	1	2	4
56-65	1	1	2	4
66-75	0	1	1	2

Table 3 demonstrates the duration of symptoms in patients. In our study 36 patients presented with symptoms for 3-9 months duration, 8 patients with 10-16 months duration and 6 patients with 17-24 months duration.

Table 3: Duration of symptoms.

Duration of symptoms (months)	Male	Female	Total	Percentage
3-9	20	16	36	72
10-16	4	4	8	16
17-24	4	2	6	12

In our study gross DNS touching lateral wall contributed for maximum cases of unilateral maxillary sinusitis (68%), followed by dental infection (6%), prominent bulla (6%), concha bullosa (4%), paradoxically turned middle turbinate (2%) as given in Figure 1.

Table 4: Distribution of factors leading to dental infection.

Factors	No. of cases
Previous endodontic treatment of upper molars	4
Periodontitis of upper molars	1
Foreign body (dental prosthesis)	1

Table 5: CT findings.

CT findings	Male	Female	Total	Percentage
Soft tissue attenuation (45-50 HU)	14	12	24	48
Periapical leucencies	2	4	6	12
Mucosal thickening	13	7	20	40

Table 4 presents the distribution of factors leading to dental infection. Previous endodontic treatment of upper molars were present in 4 cases followed by periodontitis

of upper molars present in one case and foreign body (dental prosthesis) present in one case. Table 5 presents the CT scan findings in the patients. 24 were diagnosed with soft tissue attenuation, 6 with periapical leucencies and 20 with mucosal thickening.

Figure 1: Distribution of factors causing unilateral maxillary sinusitis.

Figure 2: 35 year old female patient developed right maxillary chronic sinusitis following endodontic treatment of right upper molar.

DISCUSSION

This study was undertaken in department of ENT, JJM medical college, Davangere. 50 patients were taken into study. Unilateral maxillary sinusitis poses a significant challenge to otorhinolaryngologists as it is multifactorial and less well recognized causes like odontogenic factor is implicated in etiology which if not recognized leads to failure of treatment.⁴ Odontogenic source should be considered with history of dental pain or dentoalveolar surgery and those with extended unilateral sinusitis or unilateral sinusitis resistant to conventional treatment.⁵

Diagnostic nasal endoscopy with CT improves the diagnostic accuracy. Varied symptomatology, varied etiology and uncommon presentation of unilateral maxillary sinusitis requires comprehensive approach by otorhinolaryngologist. Cone beam computed tomography helps in identification of odontogenic cause which is otherwise missed by dental X-rays.⁶ Examination of periapical leucencies of maxillary teeth also aids in diagnosis.⁷

CONCLUSION

This study was carried out with earnest effort to identify the etiological factors of unilateral maxillary sinusitis so that correction of etiology helps in correction of disease which in turn results in success of treatment.

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Conflict of interest: None declared

Ethical approval: The study was approved by the Institutional Ethics Committee

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